

The Present State of the Methods of Determining  
Impurities in Semiconductor Materials

S/032/60/026/008/001/011  
B015/B064

application of instrumental methods, especially radioactivation and mass spectroscopic analysis, which complete each other, and can solve the problem of determining microimpurities up to  $10^{-7}$  -  $10^{-9}\%$ . I. Noddak (lectures held on the VIII Mandelstam'skiy s'yezd - 8th Mendelstam Congress, V. A. Nakhachev, I. M. Korenmas, I. S. Mustafin, V. I. Kuznetsov, K. B. Yataimirsky, Ye. A. Eshenval'tov, M. N. Patrikova, L. N. Filimonov, L. V. Lipis, E. Ye. Vaynshteyn, and Yu. F. Bydin are mentioned in the paper. There are 48 references: 10 Soviet, 1 US, 2 German, 1 British, and 1 Polish.

Card 2/2

ALIMARIN, I.P.; USHAKOVA, N.N.

History of the discovery of niobium and tantalum. Trudy Inst. ist.  
est. i tekhn. 30:15-28 '60. (MIRA 13:8)  
(Niobium) (Tantalum)

ALIMARIN, I.P.; KRAUSZ, Imre

Data on the microdetermination of thallium. Magyar kémiai folyóirat 66 no.7:  
262-263 J1 '60.

1. Eotvos Lorand Tudományegyetem Szervetlen és Analitikai Kémiai  
Intézete, Budapest,

PESHKOVA, Valentina Moiseyevna; GROMOVA, Margarita Ivanovna; ALIMARIN,  
I.P., prof., otv. red.; GOL'DENBERG, G.S., red.; LAZAREVA, L.V.,  
tekh. red.

[Practical manual on spectrophotometry and colorimetry] Prakti-  
cheskoe rukovodstvo po spetrofotometrii i kolorimetrii. Moskva,  
Izd-vo Mosk. univ., 1961. 172 p. (MIRA 15;1)

1. Chlen-korrespondent AN SSSR (for Alimarin).  
(Spectrophotometry) (Colorimetry)

ALIMARIN, Ivan Pavlovich; FRID, Berta Izrailevna; LEONT'YEVA, K.D.,  
red.; KOGAN, V.V., tekhn. red.

[Quantitative microchemical analysis of minerals and ores;  
laboratory manual] Kolichestvennyi mikrokhimicheskii analiz  
mineralov i rud; prakticheskoe rukovodstvo. Moskva, Gos.  
nauchno-tekhn.izd-vo khim.lit-ry, 1961. 399 p.

(MIRA 15:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'-  
nogo syr'ya (for Alimarin, Frid)  
(Mineralogical chemistry) (Microchemistry)

TERENT'YEV, A.P., otv.red.; ALIMARIN, I.P., red.; GEL'MAN, N.E., red.;  
KLIMOVA, V.A., red.; KRESHKOV, A.P., red.; KUZNETSOV, V.I., red.;  
LEVIN, E.S., red.; PODGAYSKAYA, Z.I., red.; RUKHADZE, Ye.G., red.;  
TAL'ROZE, V.L., red.; TSUKERMAN, A.M., red.; SHEMYAKIN, F.M., red.;  
SHEYNKER, Yu.N., red.; YERMAKOV, M.S., tekhn.red.

[Conference on organic analysis] Soveshchanie po organicheskomu  
analizu. Teziy dokladov. Moskva, Izd-vo Mosk.univ., 1961. 170 p.  
(MIRA 14:4)

1. Soveshchaniye po organicheskomu analizu. 1961.  
(Chemistry, Analytical--Congresses)  
(Chemistry, Organic--Congresses)

PESHKOVA, Valentina Moliseyevna; GROMOVA, Margarita Ivanovna;  
ALIMARIN, I.P., prof., otv. red.; GOL'DENBERG, G.S., red.;  
LAZAREVA, L.V., tekhn. red.

[Practical manual on spectrophotometry and colorimetry] Prakticheskoe rukovodstvo po spektrofotometrii i kolorimetrii.  
Moskva, Izd-vo Mosk.univ., 1961. 172 p. (MIRA 15:3)  
(Spectrophotometry) (Colorimetry)

Report to be submitted for the IUPAC 11th Conference and 11th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 2-12 August 1961

ALONSO, I. P. and ZOLOTOV, Yu. A., Institute of Geochemistry and Analytical Chemistry, Acad. Sci. USSR - "Extraction of metal cations by organic solvents as affected by the nature of the solvent" (Section A.3, 11 Aug 61, morning)  
 BAKHAROV, Kh. S. and KUTAYEV, V. A., Institute of Geochemistry and Analytical Chemistry, Acad. Sci. USSR - "Some aspects of the extraction of metal cations by organic solvents" (Section A.3, 11 Aug 61, morning)  
 BELINSON, Yu. E., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, Kiev - "The kinetics of the electrode processes in the electrolysis of molten salts" (Section B.3, 10 Aug 61, morning)  
 BELINSON, Yu. E., KURSKA, V. E., BOJKA, E. M. (Possibly J. M., E. M.), KAMAROV, O. D., and KUPCHENKO, T. M., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, Kiev - "Electrochemical experiments with molten borate and phosphate" (Section A.3, 6, (2), Session I - 11 Aug 61, morning)  
 BELINSON, Yu. E., KURSKA, V. E., and SHUKLA, G. V., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, Kiev - "The kinetics of the electrode processes in the electrolysis of molten salts" (Section B.3, 10 Aug 61, morning)  
 GELAND, M. I., Moscow State University, Acad. Sci. USSR, (Co-Chairman, Section A.3, 6, (2), Session I(3), 11 Aug 61, afternoon)  
 GERANDY, J. L., LAMBERT, V. I., KURSKA, V. E., and SHUKLA, G. V., Institute of General and Inorganic Chemistry, Academy of Sciences USSR, Kiev - "Thermodynamic properties of cerium and cerium oxides" (Section A.3, 6, (3), Session II(A), 11 Aug 61, morning)  
 GILBERT, V. I., Institute of Chemical Physics, Academy of Sciences USSR - "The proton radioactivity - a new kind of radioactive decay of nuclei" (Section A.3 - 7 Aug 61, morning)



YEROFEEV, Boris V., Institute of Physical-Chemical Chemistry, Minsk - "The effect of amount and receptor structures on the decomposition rate of solids." (Section A.2 - 8 Aug 61, afternoon)

S/137/62/000/001/233/237  
A154/A101

AUTHORS: Alimarin, I. F.; Bilimovich, G. N.

TITLE: The present state of the analytical chemistry of tantalum and niobium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 11-12, abstract 1K74 (V. sb. "Metody opredeleniya i analiza redk. elementov". Moscow, AN SSSR, 1961, 487-536)

TEXT: This review gives methods for the following: Spectrochemical determination of Nb and Ta in granites; Quantitative X-ray-spectral determination of Nb and Ta in minerals and rocks; Spectrochemical determination of Ta and Nb in ores (arc method); Separation and determination of the amount of Nb and Ta from ores and minerals with phenylarsonic acid; Separation of Nb and Ta from Ti and Nb from Zr by selenious acid; Determination of small amounts of Ta and Nb in the presence of Ti by the method of co-precipitation and isotopic dilution; Extraction separation of Ta from Ti with cyclohexanone and determination of Ta; Chromatographic separation of Nb and Ta from Ti and determination of Nb and Ta; Determination of small quantities of Nb in rocks and minerals by the rhodanide

Card 1/2

The present state of ...

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A154/A101

method (1, 2, 3). Determination of small amounts of Nb and Ta in rocks and minerals from a single weighed batch. Photometric determination of Ta in ores with dimethyl-fluorone. Analysis of binary alloys of Ni with Ta by the  $\beta$ -radiation reflection method. Extraction-photometric determination of admixtures of Ta in metallic Zr, Hf and Nb. Photometric determination of Ta in a Ti-alloy with arsenazo. Determination of Ta by differential spectrophotometry. Polarographic determination of admixtures of Nb, Ti and Fe in metallic Ta and its compounds. Oscillographic determination of Nb in Ta-Nb-alloys. Spectral determination of admixtures in Nb. Chemico-spectral determination of Bi, Cd, Sb, Sn and Pb in metallic W, Nb and Ta. Colorimetric determination of P in ferroniobium with preliminary separation of the latter in the form of ammonium phosphoromolybdate. Polarographic determination of minute amounts (of the order of micrograms) of Pb, Sn and Cd in metallic Nb. Determination of  $H_2$ ,  $O_2$  and N in Nb, Mo and W by the vacuum-melting method with the use of a Fe bath. There are 130 references.

N. Gertseva

[Abstracter's note: Complete translation]

Card 2/2

55300

2209, 1273, 1160

22332

S/189/61/000/003/002/002

D224/D302

AUTHORS: Golovina, A.P., Alimarin, I.P., and Tenyakova, L.A.

TITLE: Fluorometric determination of zirconium in the presence of titanium by quercetin

PERIODICAL: Moskva. Universitet. Vestnik. Seriya II. Khimiya, no. 3, 1961, 60-62

TEXT: The authors describe a fluorometric-chromatographic method for determining zirconium in the presence of titanium by quercetin. The procedure is a further continuation of the process described by M.A. Konstantinova-Shlezinger (Ref. 1: Referativnyy sbornik po lyuminestentomu analizu (Symposium of References on Luminescent Analysis) vyp. 1, AN SSSR, 1951), in which fluorescent reactions are employed in conjunction with the preliminary chromatographic separation of cations on paper; this enables such elements as Ga and Al, Ti and Zr, Be and Al, Ta and Nb, etc. to be separated and determined. As I.P. Alimarin, A.P. Golovina and N.F. Stepanov (Ref. 2: Nauchn. dokl.

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Fluorometric determination...

S/189/61/000/003/002/002  
D224/D302

Vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 2, 285, 1958) have already indicated, a zirconium quercetinate solution gives a strong orange-yellow fluorescence on exposure to ultraviolet light which masks any fluorescence due to titanium quercetinate, so it is essential to use both chromatographic and fluorometric techniques in order to obtain the desired result. The first step consisted of the development of a chromatographic procedure: the pipetting of aliquots of zirconium solution onto Whatman No. 1 paper, followed by the spraying of the spots with a quercetin-ethyl alcohol solution and then by their drying and subsequent identification under a Pk-2 ultraviolet lamp. Next, a study was made of the behavior of Zr, Ti, Th, Fe<sup>3+</sup>, Al and Be on paper with various solvents--mixtures of hydrochloric acid and ethyl alcohol, isopropyl alcohol and methyl-ethyl-ketone-- the resulting chromatograms being examined afterwards in visible and ultraviolet light. The data showed that it is possible to differentiate between Zr, Ti, Fe and Be on one chromatogram, and, therefore, to determine zirconium in the presence of titanium and iron; a 4 : 1 mixture of ethyl alcohol and

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Fluorometric determination...

hydrochloric acid appears to be the most suitable solvent. In the last stage this solvent is used to effect a preliminary 8-hour separation of the above elements on chromatographic paper. After spraying with 0.01% quercetin solution the intensities of fluorescence of the spots under ultraviolet light were compared with those of standards containing known amounts of zirconium (0.12 - 15%); the experimental error was  $\pm 0.2 - 0.4\%$ . The finalized technique was subsequently tested by using it to determine zirconium in titanium-iron ore which had been previously analyzed gravimetrically; the sample was prepared for analysis by dissolving a small quantity in hydrofluoric and sulfuric acids (Ref. 3: Analiz mineral'nogo syr'ya (Analysis of Mineral Products) Goskhimizdat, Leningrad, 1956). The  $ZrO_2$  content of the ore as found by the fluorometric-chromatographic procedure is 6.2% as compared with a figure of 6.7% obtained by the gravimetric technique. On the basis of this relatively close agreement the authors thus conclude that their method gives completely reliable results. There are 3 tables and 3 Soviet-bloc references.

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X

Fluorometric determination...

S/189/61/000/003/002/002  
D24/D302

ASSOCIATION: Kafedra analiticheskoy khimii (Department of Analytical Chemistry)

SUBMITTED: March 18, 1960

Card 4/4

KUZNETSOV, D.I.; ALIMARIN, I.P.

Synthesis of o-hydroxybenzenesulfonic acid, a new chemical reagent.  
Izv.AN SSSR, Otd.khim.nauk no.6:1155-1156 Je '61. (MIRA 14:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
(Benzenesulfonic acid)



S/C81/61/000/023/015/061  
B117/B147

AUTHORS: Alimarin, I. P., Yakovlev, Yu. V., Shulepnikov, M. N.,  
Peregozhin, G. P.

TITLE: Determination of small amounts of impurities in thallium,  
gallium, phosphorus, and antimony by the method of radio-  
activation analysis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 23, 1961, 128, abstract  
23D97 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar.  
kh-ve SSSR. v. I". M., Gostoptekhizdat, 1961, 293 - 297)

TEXT: A comparison was made between the radiochemical and spectroscopic  
variants of the activation analysis. General schemes of the radiochemical  
separation of impurities in the determination of Cu, Zn, As, Au, and P in  
gallium and of Mn, Cu, Zn, Ga, As, P, and Cr in antimony, as well as the  
main  $\gamma$ -spectra in the determination of Mn, Zn, Cu, Cs, and Sb in thallium  
and of As, Mn, and Ga in phosphorus are presented. [Abstracter's note:  
Complete translation.]

Card 1/1

ALIMARIN, I.P.; SHEN' KHAN'-SI [Shên Han-hsi]

Extraction method of investigating the complexing of zirconium  
and hafnium with bromomandelic acid. Zhur.neorg.khim. 6 no.9:  
2062-2068 S '61. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
(Zirconium compounds) (Hafnium compounds) (Mandelic acid)

ALIMARIN, I.P.; SHEN' KHAN'-SI [Shên Han-hsi]

Gravimetric determination of zirconium after its precipitation with  
cyclohexanol-1-carboxylic acid. Zhur.anal.khim. 16 no.2:162-165  
Mr-Ap '61. (MIRA 14:5)

1. M. V. Lomonosov Moscow State University.  
(Zirconium--Analysis)  
(Cyclohexanecarboxylic acid)

ALIMARIN, I.P.; YAKOVLEV, Yn.V.; SHCHULEPNIKOV, M.N.; VLASOV, D.A.;  
CHERNOV, G.M.; SURINOV, Yn.A.

Radioactive determination of impurities in high purity  
thallium. Zhur.anal.khim. 16 no.2:213-216 Mr-Apr '61.

(MIRA 14:5)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry,  
Academy of Sciences U.S.S.R., Moscow.

(Thallium—Analysis)

GOLOVIN, A.P.; ALIMURIN, I.P.; TSEYKOVA, L.A.

Fluorometric determination of zirconium in the presence of titanium by the use of quercetin. Vest.Mosk.un.Ser.2:khim. 16 no.3:60-62 My-Je '61. (MIR. 14:10)

1. Kafedra analiticheskoy khimii Moskovskogo gosud. univ. im. M. V. Lomonosova.

(Zirconium--Analysis)  
(Fluorescence)  
(Quercetin)

ALIMARIN, I. P.; PETRIKOVA, M. N.

New methods for organic ultramicroanalysis performed on a microscope stage. Kem tud kozl MTA 16 no.3:237-245 '61.

1. Institut geokhimi i analiticheskoy khimii im. V. I. Vernadskogo, Moskva.

55200

1043

S/075/61/016/003/003/007  
B106/B208

AUTHORS: Alimarin, I. P., and Shen Han-hsi

TITLE: Quantitative determination of scandium by halogen-substituted mandelic acids

PERIODICAL: Zhurnal analiticheskoy khimii, v. 16, no. 3, 1961, 279-283

TEXT: In their last report (Ref.1: Alimarin I. P., Shen Han-hsi. Zh. analit. khimii 15, 31 (1960)), the authors had devised a new method of determining scandium with mandelic acid. Scandium mandelate being comparatively well soluble in water, the authors studied the applicability of halogen-substituted mandelic acids for scandium precipitation. p-chloro, p-bromo, and p-iodo mandelic acids were studied. Table 1 shows the determined solubilities of these reagents in water. In order to find out the optimum conditions of precipitating scandium, the method described in Ref.1 was used. Far less p-halogen-substituted mandelic acid than mandelic acid is necessary for a complete precipitation of scandium. Concentrations of 0.02 M p-chloro, or p-bromo mandelic acid, and 0.01 M p-iodo mandelic acid are sufficient for precipitation. Scandium was found to be quantitatively

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S/075/61/016/003/003/007  
B106/B208

Quantitative determination of ...

precipitated in acid medium by all three reagents studied. The p-halogen mandelates of scandium still precipitate quantitatively from considerably weaker acid solutions than scandium mandelate which does not completely precipitate any longer at  $pE > 3.2$  owing to its high solubility in ammonia. The introduction of a halogen into the benzene nucleus of mandelic acid increases the stability of scandium complex compounds in alkaline solution. The authors studied the composition of those compounds that were separated from acid solution and were then washed with ether and alcohol. Scandium was determined by annealing the compounds dried at  $110^{\circ}\text{C}$  to the oxide, while the organic portion of the compounds was determined by cerimetric titration according to M. R. Verma (Ref.4: Verma M. R., Paul S. D., J. Sci. Ind. Res. 12 B, 178 (1953); Ref.5: Verma M. R., Paul S. D., Nature 173, 1237 (1954)). The crystal water content was calculated as difference to 100%, and also determined thermogravimetrically. The composition of compounds corresponds to the formula  $\text{H}_3[\text{Sc}(\text{Hal} \cdot \text{C}_8\text{H}_5\text{O}_3)_3] \cdot \text{H}_2\text{O}$  (Hal = Cl, Br, I). The thermogravigrams of scandium halogen mandelates show that the crystal water is released at  $120-160^{\circ}\text{C}$ . At  $260-280^{\circ}\text{C}$ , the compounds begin to decompose, at  $500-540^{\circ}\text{C}$  they are converted to scandium oxide. Table 3 shows the solubility of the resultant compounds in water, Table 4 presents Card 2/12.




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Quantitative determination of ...

the results of scandium determination by means of the three reagents studied. This method permits the determination of mg-amounts of scandium in 100 ml solution. Since rare earths are precipitated only at higher pH by p-halogen mandelic acids, these reagents also permit a separation of scandium from rare earths. When scandium is determined with p-bromo mandelic acid in the presence of rare earths of the cerium group, part of the rare earths is coprecipitated in one single scandium precipitation. Reprecipitation is therefore necessary. The disturbing effect of thorium may be eliminated by masking with citric acid. Table 5 shows results of scandium determination in the presence of rare earths of the cerium group. p-halogen mandelates of scandium can be extracted with organic solvents. p-chloro and p-bromo mandelates of scandium are well extractable with n-butanol, isoamyl alcohol, cyclohexanone, ethyl acetate and other alcohols, ketones, and esters, while they are insoluble in ethyl ether, methanol, ethanol, benzene, chloroform, carbon tetrachloride, etc. p-iodo mandelate of scandium cannot be extracted with organic solvents. The authors studied the extraction of p-chloro and p-bromo mandelates of scandium with isoamyl alcohol. Already at one single extraction, 98-100% of the scandium compounds pass over to the organic phase. They may be re-extracted from the organic solution with 1 N hydrochloric acid. It was found that in this way

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Quantitative determination of ...

also microamounts of scandium were extractable and that the separation of scandium from large amounts of rare earths was possible. Table 6 shows the results of separating scandium from rare earths of the cerium group by extraction of p-bromo mandelate with isoamyl alcohol at pH 3.0-3.5. There are 3 figures, 6 tables, and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: Belcher R., Sykes A., Taltow J. C., Anal. Chim. Acta 10, 34 (1954); Verma M. R., Paul S. D., J. Sci. Ind. Res. 12 B, 178 (1953); Verma M. R., Paul S. D., Nature 173, 1237 (1954).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 13, 1960

Card 4/12

ALIMARIN, I.P.; SHAKHOVA, N.V.

Gravimetric determination of scandium by means of benzeneseleninic and benzenesulfonic acids. Zhur. anal. khim. 16 no. 4: 412-416 J1-Ag '61.  
(MIRA 14:7)

1. V.I. Vernadskiy Institute of Geochemistry and Analytical Chemistry,  
Academy of Sciences U.S.S.R., Moscow.  
(Scandium--Analysis)

ALIMARIN, I.P.; FADEYEVA, V.I.; PETROVA, T.N.

Gravimetric determination of scandium with phenylphosphinic acid.  
Zhur.anal.khim. 16 no.5:549-551 S-O '61. (MIRA 14:9)

1. Lomonosov Moscow State University.  
(Scandium--Analysis) (Phosphinic acid)

ALIMARIN, I. P.; BILIMOVICH, G. N.

Quantitative determination of niobium and tantalum by the isotopic dilution method. Coll Cz chem 26 no.1:255-261 Ja '61.  
(KEAI 10:9)

1. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo, Akademiya nauk SSSR, Moskva.

(Niobium) (Tantalum) (Isotopes)

55110

26382  
S/032/61/027/008/002/020  
B107/B206

AUTHORS: Alimarin, I. P., Borzenkova, N. P., and Zakarina, N. A.

TITLE: Detection of titanium traces in pure aluminum by means of salicyl hydroxamic acid

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 8, 1961, 958 - 960

TEXT: The known methods of detecting titanium traces in metallic aluminum do not permit extraction of the color complexes. Detection with salicyl hydroxamic acid, however, offers some advantages: The titanium complex is stable between pH 5 and 18 N H<sub>2</sub>SO<sub>4</sub>; it dissolves in amyl alcohol, methyl alcohol, ethyl alcohol, acetyl acetone, etc.; sensitivity amounts to 10<sup>-5</sup> mg of Ti/ml (Ref. 5, see below); the reaction is selective, only F<sup>III</sup> interferes; the synthesis of the reagent is simple (P. Rogan, V. Marecek. Chem. Listy, 45, 461 (1951)). The method elaborated by the authors uses extraction with acetyl acetone and measurement of the absorption maximum at 375 mμ. The molar extinction coefficient is here

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B107/B206

Detection of titanium traces...

4860. At this wavelength, the coextracted salicyl hydroxamic acid absorbs to a certain degree, but this absorption remains constant when maintaining the working instructions. The Lambert-Beer law holds for concentrations between 0.01 and 1.5  $\mu\text{g/ml}$ . The CQ-4(SF-4) spectrophotometer serves for measuring; vessels with a liquid layer 1 cm thick are used.  $5 \cdot 10^{-3}$  to  $2 \cdot 10^{-4}\%$  of Ti may thus be determined with an accuracy of 5 - 15%. With specially purified reagents and a special quartz vessel with a layer 5 cm thick,  $2 \cdot 10^{-5}\%$  of Ti may still be determined with an accuracy of 10 - 20%. There are 1 figure, 2 tables, 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: Ref. 5: J. Xavier, A. K. Chakrabortti, P. Ray. Sci. and Culture, 3, 146, 20 (1954); Ref. 7: A. E. Harvey, D. L. Manning, J. Amer. Chem. Soc., 72, 4488 (1950).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

Card 2/2

ZOLOTOV, Yu.A.; ALIMARIN, I.P.

Some aspects of the theory of extraction of inner-complex compounds.  
Dokl. AN SSR 136 no. 3:603-606 Ja '61. (MIRA 14:2)

1. Institut geokhimii i analiticheskoy khimii imeni V.I. Vernadskogo  
AN SSSR. 2. Chlen-korrespondent AN SSSR (for Alimarin).  
(Extraction (Chemistry)) (Complex compounds)



20356

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B103/B208

21.3100  
AUTHORS:

Alimarin, I. P., Corresponding Member AS USSR,  
Petrukhin, O. M., and Tsze Yun'-syan

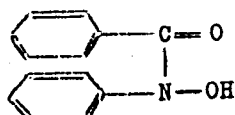
TITLE:

Separation of niobium and tantalum by extraction of  
niobium-N-benzoyl-phenyl-hydroxyl aminate

PERIODICAL:

Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1073-1074

TEXT: To separate niobium and tantalum, which is one of the most  
difficult problems in analytical chemistry (Ref. 1), the authors used the  
cupferron analog N-benzoyl-phenyl-hydroxyl amine (BPHA) in the presence  
of tartaric acid (Ref. 7).



(BPHA)

BPHA with niobium forms a complex compound soluble in chloroform.  
Tartaric acid retains both niobium and tantalum in the solution, but does  
not hinder the extraction. This innovation has, conversely, greatly

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Separation of niobium and tantalum ...

facilitated extraction, because the well-known difficulties of extraction arising in the presence of  $F^-$  could be thereby avoided. To check extraction, the authors used the radioactive isotopes  $Nb^{95}$  and  $Ta^{182}$ . To eliminate an incomplete isotopic exchange,  $Nb^{95}$  and  $Ta^{182}$  were added to the stable isotopes before dissolving the  $Nb_2O_5$  and  $Ta_2O_5$  samples in a mixture of concentrated  $H_2SO_4$  and  $(NH_4)_2SO_4$ . The resultant cake was dissolved in tartaric acid. The solutions thus prepared contained 0.35  $\mu g/ml$   $Nb_2O_5$  and 0.30  $mg/ml$   $Ta_2O_5$ , and were 3 %, referred to tartaric acid. 1 ml of 10% alcoholic BPHA solution was added to 4 ml solution. After the precipitate was formed, 5 ml of chloroform were added, and the mixture shaken for 3 min. The authors found that the pH of the aqueous phase did not change after extraction. Activity was measured in 2 ml taken from the organic phase by means of an apparatus with a  $\gamma$ -counter. The Nb and Ta extraction curves were plotted in dependence on the pH of the solution on the basis of the measured values. The authors found that 98-100% niobium were obtained

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B103/B208

Separation of niobium and tantalum ...

in a pH range of 4-6 by a single extraction, whereas no tantalum at all was extracted. At a Ta extraction between pH 0.5 and 3.0, the tantalum compound is partly superseded at the phase boundary. In the range of pH 6-9 the extraction results with tantalum are hardly reproducible. The authors checked this new separation method on artificial Nb-Ta mixtures. In each case, only one of the elements contained the radioactive isotope. The results obtained confirm a satisfactory and quick separation of Nb and Ta up to a quantitative ratio of Nb : Ta = 100 : 1, 1 : 100. There are 1 figure, 1 table, and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences, USSR)

SUBMITTED: November 16, 1960

Card 3/3

STANCHEVA, St.; ALIMARIN, I.; TSINTSEVICH, E.

Behavior of iridium in solutions containing sulfate ions,  
studied by the method of ion exchange. Pt. 2. Godishnik  
khim tekhn 8 no.2:17-23 '61 [publ. '62].

TSINTSEVICH, E.; STANCHEVA, St.; ALIMARIN, I.

Behavior of indium in sulfate-ion solutions studied with the ion-exchange method. *Godishnik khim tekhn* 8 no.1:89-97 '61 [publ. '62].

ALIMARIN, I.P., PETRAKHIN, O.M.

"Extraction of inner complex compounds of rare elements with  
N-Benzoylphenylhydroxylamine."

Report to be submitted for the Intl. Feigl Anniversary Symposium on  
Analytical Chemistry  
Edgbaston, Birmingham, Great Britain 9-13 Apr 1962

BUSEV, Aleksey Ivanovich; VINOGRADOV, A.P., akademik, glav. red.;  
ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye.,  
red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; PALEY, P.N.,  
red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV,  
Yu.A., red.; VOLINETS, M.P., red.; MAKUNI, Ye.V., tekhn. red.

[Analytical chemistry of molybdenum] Analiticheskaya khimiya mo-  
libdena. [By] A.I.Busev. Moskva, Izd-vo Akad. nauk SSSR, 1962.  
300 p. (MIRA 16:1)

(Molybdenum--Analysis)

UDAL'TSOVA, N.I.; SAVVIN, S.B.; NEMODRUK, A.A.; NOVIKOV, Yu.P.;  
DOBROLIUBSKAYA, T.S.; SINYAKOVA, S.I.; BILIMOVICH, G.M.;  
SEN'DYUKOVA, A.S.; BELYAYEV, Yu.I.; YAKOVLEV, Yu.V.;  
NEMODRUK, A.A.; CIMUTOVA, M.K.; GUSEV, N.I.; PALEY, P.N.;  
VINOGRADOV, A.P., akademik, glav. red.; ALIMARTIN, I.P.,  
red.; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye.,  
red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; RYABCHIKOV,  
D.I., red. toma; TANANAYEV, I.V., red.; CHERNIKHOF, Yu.A., red.;  
SENYAVIN, M.M., red. toma; VOLYNETS, M.P., red.; NOVICHKOVA, N.D.,  
tekh. red.; GUS'KOVA, O.M., tekh. red.

[Analytical chemistry of uranium] Analiticheskaya khimiya urana.  
Moskva, Izd-vo Akad.nauk SSSR, 1962. 430 p. (MIRA 15:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy  
khimii.

(Uranium--Analysis)



ALIMARIN, I. P.; GOLOVINA, A.P.; TENYAKOVA, L. A.

Determination of zirconium in titanium and iron-containing  
ores with quercetin. Metod. anal. khim.reak. i prepar.no.  
4:128-130 '62. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet.

S/189/62/000/005/003/006  
D204/D307

AUTHORS: Belyavskaya, T. A., Alimarin, I. P., and  
Mu Ping-Wen

TITLE: Chromatographic separations of zirconium and  
beryllium

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II,  
Khimiya, no. 5, 1962, 41-44

TEXT: The present work is a part of systematic study of the  
separation of Zr from metals with which it is commonly alloyed,  
by chromatographic methods. The sorption of Zr and Be was  
first measured--up to 11N HCl, up to 5N HNO<sub>3</sub>, up to 20% (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>,  
and up to 5% complexone III--on cationite KY-2 (KU-2) and  
anionite AB-17 (AV-17) under static conditions. Comparison  
of the results revealed that the two metals might be separated  
chromatographically from 2N acids, 2% complexone III, and 5%

Card 1/2

Chromatographic separations...

S/189/62/000/005/003/006  
D204/D307

(NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>, although the difference in sorption was not so pronounced in the latter case. It was experimentally confirmed that Zr and Be may be effectively separated on KU-2 from 2N HCl or 2N HNO<sub>3</sub> solutions, for Zr:Be ratios (n) varying from ~2000:1 to ~1:7000, by passing the acid solutions of the mixtures over KU-2 packed in an 18 cm, 1.2 cm diam. column at 2 ml/min, eluting the Be with pure 2N acid and desorbing Zr with 4N acid. The metals were also separated in a 14 cm, 1.2 cm diam. column packed with KU-2 from a 2% complexone III solution, with n varying from 25:1 to 1:800, eluting Zr with the pure solvent, removing complexone III from the column with water, and desorbing Be with 3N HCl. There are 4 figures and 2 tables. ✓

ASSOCIATION: Kafedra analiticheskoy khimii (Department of Analytical Chemistry)

SUBMITTED: December 14, 1960

Card 2/2

S/189/62/000/005/004/006  
D204/D307

AUTHORS: Alimarin, I. P., Nikolayeva, Ye. R., and  
Masalovich, V. M.

TITLE: A study of the system uranium (IV) - uranium  
(III)

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II,  
Khimiya, no. 5, 1962, 50-54

TEXT: The electrolytic reduction of uranyl salts was studied  
on an Hg cathode in  $\sim 0.1 - 1.1N$  HCl,  $H_2SO_4$ , and  $HClO_4$ , under  
 $N_2$ , with a Pt anode, at  $40 - 50$  and  $12 - 15^\circ C$ , for up to 4  
hours, from solutions containing 0.01 or 0.1 mol of U per liter. ✓  
The highest degrees of reduction were observed in 0.4N HCl,  
0.2N  $H_2SO_4$ , and 0.2N  $HClO_4$  (47 - 49, 40 - 44, and 34 - 36 %  
respectively) for durations of 1.5 - 2.5 hrs, at  $12 - 15^\circ C$ ; further  
increases of acidity or time of reaction led to a decrease in the

Card 1/2

A study of...

S/189/62/000/005/004/006  
D204/D307

degree of reduction, particularly in the case of  $H_2SO_4$ . The formal redox potentials of the  $[U(IV)]/[U(III)]$  system, at  $13^\circ C$ , for  $[U]_{tot.} = 0.01M$ , on a W electrode, were found to be  $-0.335 \pm 0.001$ ,  $-0.317 \pm 0.008$ ,  $-0.304 \pm 0.002$ ,  $-0.303 \pm 0.005$ , and  $-0.280 \pm 0.005$  volts in  $0.2N H_2SO_4$ ,  $0.4N H_2SO_4$ ,  $0.2N HCl$ ,  $0.4N HCl$ , and  $0.2N HClO_4$  respectively. It was shown that trivalent uranium can be potentiometrically titrated with  $NH_4VO_3$ , using a W electrode. There are 3 figures and 3 tables.

ASSOCIATION: Kafedra analiticheskoy khimii (Department of Analytical Chemistry)

SUBMITTED: March 31, 1961

Card 2/2

ALIMARIN, I.P.; TSYURUPA, M.G.

M.V. Lomonosov and analytical chemistry. Vop. 1st. est. i tekhn.  
no. 12: 51-61 '62. (MIRA 15:4)  
(Lomonosov, Mikhail Vasil'evich, 1711-1765)  
(Chemistry, Analytic)

S/186/62/004/003/004/022  
E075/E436

AUTHORS: Zolotov, Yu.A., Alimarin, I.P.

TITLE: Influence of the nature of the solvent on the  
extraction of internal complex compounds

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 272-279

TEXT: The authors investigated the influence of the chemical nature of the solvent on the extraction of a number of internal complex compounds of Np(V), V (VI), Co (II), Ce, Fe and some other elements. The solvents used were alcohols, ketones, complex esters, simple esters, halogen substituted hydrocarbons and hydrocarbons. For each solvent the dependence of the extraction on the pH of the aqueous phase was studied and the comparison of the various solvents was obtained at the optimum pH values. It was shown that Np (V) and Co (II) are extracted readily with solutions of tenoyl trifluoroacetone in butyl alcohol. The internal complex compounds in which the coordination forces are not saturated are easier to extract with active oxygen-containing solvents, in particular alcohols, and are usually more difficult to extract with other compounds, such as hydrocarbons and their

Card 1/2

Influence of the nature ...

S/186/62/004/003/004/022  
E075/E436

halogen substituted derivatives. The extraction of the complex compounds can be made easier by their combination with the excess reagent. In this connection the application of polydentate reagents is considered as possible in the future. The internal complex compounds with saturated coordination valencies are extracted with different types of solvents, including nonpolar oxygen free solvents, such as chlorinated hydrocarbons. A scheme is given for the separation of the complex compounds with saturated and unsaturated coordination valencies. The "saturated" compounds are extracted with the reagent solution in a non-reactive solvent such as benzene; the compounds with the unsaturated coordination often remain in the aqueous phase. Subsequently, the second element is extracted with an active solvent such as butyl alcohol. There are 4 figures and 2 tables.

SUBMITTED: March 25, 1961

Card 2/2



ALIMARIN, I.P.; BILMOVICH, G.N.; YAN YUY-SEN'

Study of the exchange between radioactive and stable  
niobium in citrate complexes by the method of isotope  
dilution. Radiokhimiya 4 no.4:510-512 '62. (MIRA 15:11)

(Niobium compounds)  
(Citrates) (Niobium--Isotopes)

KUZNETSOV, D.I.; ALIMARIN, I.P.

Quantitative determination of some rare elements by means of  
-naphthalenesulfonic acid. Izv.vys.ucheb.zav.; khim.i khim.  
tekh. 5 no.1:26-30 '62. (MIRA 15:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova,  
kafedra analiticheskoy khimii.  
(Naphthalenesulfonic acid) (Metals—Analysis)

ALIMARIN, I.P.; GIBALO, I.M.; THIN' GUAN-ZHUN [Ch'in Kuang-jung]

Separation of niobium and tantalum from titanium and iron by  
the chromatographic method. Izv.vys.ucheb.zav.;khim.i khim.tekh.  
5 no.3:374-377 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova,  
kafedra analiticheskoy khimii.  
(Niobium) (Tantalum)  
(Ion exchange resins)

ALIMARIN, I.P.; NIKOLAYEVA, Ye.R.; TIKHONOVA, V.I.; BOBROVA, L.V.

Oxidation-reduction properties of bivalent vanadium compounds.  
Zhur.neorg.khim. 7 no.2:298-304, F '62. (MIRA 15:3)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova,  
kafedra analiticheskoy khimii.  
(Vanadium compounds) (Oxidation-reduction reaction)

S/078/62/007/002/011/019  
B145/B110

AUTHORS: Alimarin, I. P., Petrukhin, O. M.

TITLE: The state of columbium and tantalum in tartaric acid solutions

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 2, 1962, 401 - 406

TEXT: The state of Cb and Ta in 3% tartaric acid solutions was studied by ion exchange, extraction and dialysis. ЭД-10П (EDE-10P) anionite and КУ-2 (KU-2) cationite were used as ion exchangers. The sorption coefficient  $K_d$  was calculated by the equation  $K_d = (\% \text{ of sorbed metal} \cdot V) / (100 - \% \text{ of sorbed metal}) \cdot m$ , where  $V$  = volume of solution, ml, and  $m$  = amount of exchanger, g. Cb<sup>98</sup> and Ta<sup>182</sup> were used as tracers (Figs. 1,2). Tests with Ta in 3% trihydroxy glutaric acid at  $c_{Ta} = 0.25 \text{ mg/ml}$  yielded a sorption minimum at pH ~ 7. In 3% oxalic acid at  $c_{Cb} = 5 \cdot 10^{-2} \text{ mg/ml}$  a sorption minimum at pH ~ 6 was observed. The percentage of colloidal forms (by dialysis measurements using Cellophane membranes) present in 3% tartaric

Card 1/4

The state of columbium and ...

S/078/62/007/002/011/019  
B145/B110

acid solution (pH 3,  $c_{\text{metal}} = 0.25 \text{ mg/ml}$ ) was determined at 15 - 20% for Cb, and 50 - 55% for Ta. Extraction from 3% tartaric acid solutions (0.25 mg Cb, resp. Ta/ml) by means of alcoholic 10% triphenyl guanidine hydrochloride solution + nitro-benzene was optimum at pH 2 - 3. Ta was found to form a precipitate at the interface, particularly at pH 2. It follows that over the entire pH range studied, both Cb and Ta, in particular, are present only in the form of anions (the cationite does not absorb Cb at pH 3 - 5, or Ta at pH 6.5 - 7), i.e. monomeric, and, especially with Ta, in colloiddally dispersed form (with Cb in the pH range 3.5 - 5, and with Ta in the pH range 4 - 8). The different behavior of Cb and Ta with increasing concentration (Fig. 5) is due to the different hydrolytic stability of the respective tartaric acid complexes. Cb may be masked by Ta, since Ta is present in colloiddally dispersed form already at  $c_{\text{Ta}} = 6.8 \cdot 10^{-3} \text{ mg/ml}$ , Cb, however, only above  $c_{\text{Nb}} = 2.5 \cdot 10^{-1} \text{ mg/ml}$ . Boiling of the solutions prior to sorption destroys the colloids and increases sorption (by about 20% after 1 hr boiling). The extraction of Cb and Ta tartaric acid complexes by

Card 2/3

The state of columbium and ...

S/078/62/007/002/011/019  
B145/B110

triphenyl guanidine hydrochloride might be used for separating the metals (at pH 3, extraction of Cb is 100%, and that of Ta approximately 60%. There are 6 figures, 1 table, and 21 references: 11 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: N. R. Srinivasan. Proc. Ind. Acad. Sci., 36A, N 4, 278 (1952); F. Fairbrother, J. B. Taylor. J. Chem. Soc., 4946 (1956); F. Fairbrother, D. Robinson, I. B. Taylor. J. Inorg. Nucl. Chem. 8, 296 (1958); M. Haissinsky, Yang Jeng-Tsong. Analyt. chim. acta, 4, 323 (1950).

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR)

SUBMITTED: January 30, 1951

Card 3/4 3

ALIMARIN, I.P.; PETRUKHIN, O.M.

Extraction of niobium and tantalum N-benzoylphenylhydroxylamines.  
Zhur.neorg.khim. 7 no.5:1191-1196 My '62. (MIRA 15:7)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo  
AN SSSR.

(Niobium) (Tantalum) (Complex compounds)



S/078/62/007/012/009/022  
B144/B180

AUTHORS: Alimarin, I. P., Bilimovich, G. N., Ts'ui Hsiang-hang

TITLE: Extraction of niobium and tantalum as 8-hydroxyquinoline complexes from hydroxy acid solutions

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 12, 1962, 2725-2730

TEXT: Nb and Ta were extracted from 2% tartaric, oxalic, citric or trihydroxy glutaric acids (pH 1 - 12) with  $\text{CHCl}_3$ ,  $\text{C}_2\text{H}_4\text{Cl}_2$ , toluene,  $\text{CCl}_4$ , isoamyl alcohol, isobutyric aldehyde, methyl-ethyl ketone, cyclohexanone, amyl acetate of diisopropyl ether. The efficiency of Nb extraction decreased in the order citric, tartaric, trihydroxy glutaric acid. The curves for the first two showed maxima at pH ~4.5 and ~9.5, and a minimum at pH 6 - 8. In the subsequent tests the complex was extracted from citric acid (pH 1- 10). With both polar and non-polar solvents the curves for the extraction of the Nb complex were the same shape as described above. Extractive separation of the Ta complex was only successful with polar solvents.  $\text{CH}_3\text{Cl}$ ,  $\text{C}_2\text{H}_4\text{Cl}_2$  and toluene were best for the separation

Card 1/2

Extraction of niobium and tantalum ...

S/078/62/007/012/009/022  
B144/B180

of Nb and Ta. Further tests concerned extraction efficiency as a function of the concentrations of 8-hydroxyquinoline (a), citric acid (b), and Nb (c). a) The reagent:Nb<sub>2</sub>O<sub>5</sub> molar ratio must be at least ~10, preferably ~40, in mixtures with an optimum pH of 4.5 or 9.5. b) When the citric acid:Nb<sub>2</sub>O<sub>5</sub> molar ratio exceeds 50, Nb extraction decreases.

c) The extraction efficiency in acid media increases as the Nb content falls. It was 91.6% with an Nb content of  $5 \cdot 10^{-4}$  mg/ml, but only 18.5% with 0.5 mg/ml. This is attributed to dimer formation which occurs in the acid range when the Nb content increases. These polymers decompose in the alkaline range where the degree of extraction is independent of the Nb content. There are 9 figures and 1 table. ✓

SUBMITTED: December 23, 1961

Card 2/2

S/075/62/017/001/001/003  
B106/B101

AUTHORS: Alimarin, I. P., Gibalo, I. M., and Ch'in Kuang-jung

TITLE: Niobium determination by the method of differential spectrophotometry

PERIODICAL: Zhurnal analiticheskoy khimii, v. 17, no. 1, 1962, 60-64

TEXT: Niobium in hydrochloric acid medium was determined by differential spectrophotometry. According to published data, niobium in concentrated hydrochloric acid forms the compound  $H[Nb(OH)_2Cl_4]$ , whose absorption maximum lies at 281 mμ. Spectrophotometric studies showed that real hydrochloric acid solutions of niobium are prepared with difficulty, and almost impossibly in the presence of tantalum. To prepare real niobium hydrochloric acid solutions, a weighed portion of pure  $Nb_2O_5$  was decomposed with potassium pyro-sulfate. The cold melt was dissolved in tartaric acid solution, and the solution mixed with concentrated hydrochloric acid. The light absorption of this hydrochloric acid solution was measured with an  $C\phi-4$  (SF-4) spectrophotometer. Complex niobium chloride,

Card 1/4

Niobium determination by the...

S/075/62/017/001/001/003  
B106/B101

$H[Nb(OH)_2Cl_4]$ , was formed with high chlorine ion concentration in acid medium. Maximum optical density of the solutions of the complex is attained at 283 mμ in 11 N HCl, or in 4 N HCl + 1:1 N LiCl, or 10 N HCl + 5 N LiCl. Tartaric acid and small amounts of sulfate ions do not affect the light absorption. The solutions of the complex are stable for a practically unlimited period, and follow Beer's law in the range of 0.88-10 g of  $Nb_2O_5$ /ml. The apparent molar absorption coefficient has the value of 9000. Ircon, molybdenum, titanium (and, to a small extent, also tantalum) disturb the niobium determination described. Small amounts of titanium ( $Nb_2O_5 : TiO_2 = 14 : 1$ ) and iron ( $Nb_2O_5 : Fe_2O_3 = 46 : 1$ ), as well as tantalum up to a ratio  $Nb_2O_5 : Ta_2O_5 = 1 : 1.5$ , do not affect the accuracy of determination. Zirconium, tungsten, and rare earths have almost no effect on the determination. The niobium determination by differential spectrophotometry was, in principle, carried out according to published data (Refs. 1, 3: see below; Ref. 4: Dobkina, B. M., Malyutina, T. M., Zavodsk. laboratoriya 24, 1336 (1958); Ref. 5: Hiskey C. F., Soung J., Anal. Chem. 29, 1196 (1951)). The  $Nb_2O_5$

Card 2/4

Niobium determination by the...

S/075/62/017/001/001/003  
B106/B101

concentration in the solution to be analyzed was 0.372-0.620 mg/25 ml. The method was used for determining niobium in three alloys with a major amount of niobium, 3-30 % tantalum, and minor amounts of titanium and iron. The weighed portion of alloy was dissolved in an  $\text{HF} + \text{H}_2\text{SO}_4$  mixture. The solution was fumed off 2-3 times with sulfuric acid, and the residue calcined at 800-900°C. The resulting oxides were decomposed with potassium pyro-sulfate. After cooling, the melt was dissolved in 20 % tartaric acid, and mixed with concentrated hydrochloric acid. An aliquot part of this solution was diluted with 10 N HCl and 2 % tartaric acid, and then measured by differential spectrophotometry. The standard solution was prepared in a similar way; it contained 0.372-0.382 mg of  $\text{Nb}_2\text{O}_5$ /25 ml. The niobium content of the sample was determined from a calibration curve, and calculated from the formula  $C_x = C_o + FD (C_x$  niobium concentration in the solution to be analyzed;  $C_o$  niobium concentration in the standard solution;  $F = \Delta C/D$ ;  $\Delta C = C_1 - C_2$ ).<sup>o</sup> The results were compared with results of gravimetric determinations. The differential method is not superior in accuracy to the gravimetric method but reduces

Card 3/4

ALIMARIN, I.P.; PUZDRENKOVA, I.V.; SHIRYAYEVA, O.A.

Preparation of sodium cerium periodate. Vest.Mosk.un.Ser.2:  
Khim. 17 no.2:61-62 Mr-Apr. '62. (MIRA 15:4)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.  
(Cerium salts) (Potassium periodates)

ALIMARIN, I.P.; ZOLOTOV, Yu.A.

Nomenclature of extraction. Zhur.anal.khim. 17 no.2:263-266  
Mr-Apr '62. (MIRA 15:4)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo  
AN SSSR, Moskva.  
(Extraction (Chemistry)--Nomenclature)

ALIMARIN, I.P.; PETRUKHIN, O.M.; ZOLOTOV, Yu.A.

Extractibility on inner complex compounds as dependent on the pH of the aqueous phase. Minima on the extraction curves. Zhur.-anal.khim. 17 no.5:544-550 Ag '62. (MIRA 16:3)

1. V.I. Vernadskiy Institute of Geochemistry and Analytical Chemistry  
Academy of Sciences, U.S.S.R., Moscow.  
(Chelates) (Extraction (Chemistry))  
(Hydrogen-ion concentration)



S/075/62/017/005/004/007  
I033/1233

AUTHORS: Golovina, A.P., Alimarin, I.P., Bozhevol'nov, Ye. A.  
and Agasyan, L.B.

TITLE: Datiscine - a new fluorimetric reagent for zirconium

PERIODICAL: Zhurnal analiticheskoy khimii, v.17, no. 5, 1962,  
591-594

TEXT: Datiscine (3,5,7,2' - tetraoxyflavone glucoside) produces with a number of cations soluble compounds which fluoresce upon irradiation with ultraviolet rays. In the case of Zr maximal fluorescence is observed in a 6 N HCl medium at 520 m $\mu$  upon irradiation at 388 m $\mu$ . A 100 fold excess of reagent is permissible. Intensity of fluorescence reaches a constant value

Card 1/3

S/075/62/017/005/004/007

I033/I233

Datiscine - a new ....

after 15-20 min. It decreases with increase of ethanol concentration. Intensity is proportional to Zr concentration in the range of 0.005 - 3 ml. This makes datiscine a most sensitive reagent for Zr. In the 1.5 - 6 N HCl acidity range there is no interference from any amount of Mg and Zn, 100,000-fold excess of Al and 100-fold excesses of Ag, Cd, Mn(II), Cu(II), Pb, Hg(II), Be, Co(II), In, Cr(III), Fe(II), Ta(V), V(V), Ni(II), Nb(V), W(VI), Y, U(VI), Ce(III), and La. In 6 N HCl, 10-fold excesses of Fe(III), Mo(VI), Ti(VI), Sb(V), Th and Ga do not interfere. This method was used for determination of Zr in aluminum and magnesium alloys. There are 2 figures and 4 tables. ✓

Card 2/3

S/075/62/017/005/004/007  
1053/1233

Datiscine - a new...

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i  
Vsesoyuznyy nauchno- issledovatel'skiy institut khimicheskikh  
reaktivov i osobo chistykh khimicheskikh veshchestv (Moscow State  
University im M.V. Lomonosov and All-Union Scientific Research Institute  
of Chemical Reagents and High-Purity Chemical Substances) Moscow

SUBMITTED: June 28, 1961

Card 3/3

S/075/62/017/006/003/004  
I032/I230

AUTHORS: Alimarin, I.P., Puzdrenkova, I.V., and  
Dolnikova, S.Ya.

TITLE: Purpurogallin as a reagent for the spectrophotometric  
determination of zirconium.

PERIODICAL: Zhurnal analiticheskoy khimii, v.17, no.6, 1962,  
700-703

TEXT: The absorption spectra of solutions of purpurogallin in  
aqueous dioxan at various pH are given...  $K_{\text{dissoc}}$  of purpurogallin  
has been determined at the ionic strength of 0.1;  $pK$  was found to be  
 $6.35 \pm 0.25$ . It was found that purpurogallin gives colored complex  
compounds with beryllium, gallium, indium, titanium, zirconium, scan-  
dium and rare earth elements. With zirconium, purpurogallin gives a  
complex compound that is soluble in an acid medium and has an absorp-

Card 1/3

S/075/62/017/006/003/004  
I032/I232

Purpurogallin as a reagent...

tion maximum at 330 mμ, with an apparent extinction coefficient of 33000 - 34000. A method has been worked out for the determination of zirconium at concentrations as low as 0.09 μ/ml, in the presence of iron at a concentration not exceeding 50 times that of zirconium. There are 5 figures and 1 table. The English language references read: Evans, T.W., Dehn, W.M., Jour. Amer. Chem. Soc. 52, 3647 (1930). Ramano Rao, D.V., Guva Sirkar, S.S., Jour. and Proc. Instn. Chemists 28, 238 (1956). Wamagat, U., Bull. Soc. chim. France 5, 307 (1954). Tchakirian, Ar., Devillard, P., Compt. rend. 233, 256, 1112 (1951). Bevillard, P., Mikrochim. 39, 209 (1952). Connick, R.E., McVey, W.H., Jour. Amer. Chem. Soc. 71, 3182 (1949). Connick, R.E., Reas, W.H., Jour. Amer. Chem. Soc. 73, 1171 (1951). Milner, G.W.C., Edwards, J.W., Analyst 85, 86 (1960).

ASSOCIATION: Moskovskiy gosudarstvenny universitet im. M.V. Lomonosova  
(M.V. Lomonosov Moscow State University)

Card 2/3

S/075/62/017/006/003/004  
I032/I232

Purpurogallin as a reagent...

SUBMITTED: July 3, 1961

Card 3/3

ALIMARIN, I.P.; ZOLOTOV, Yu.A.; PETRUKHIN, O.M.

"Separation of heavy metals" by A.K.De. Reviewed by I.P.Alimarin,  
Yu.A.Zolotov, O.M.Petrukhin. Zhur.anal.khim. 17 no.6:772 S '62.  
(MIRA 16:1)

(Metals—Analysis) (De, A.K.)

ALIMARIN, I.P.; LASTOVSKIY, R.P.

International Symposium on Analytical Chemistry. Zhur.aral.  
khim. 17 no.6:775-776 S '62. (MIRA 16:1)  
(Chemistry, Analytical--Congresses)



S/075/62/017/008/004/004  
E071/E135

AUTHORS: Fadeyeva, V.K., and Alimarin, I.P.

TITLE: Use of chlorophosphonazo III for the photometric determination of titanium, zirconium, thorium and scandium

PERIODICAL: Zhurnal analiticheskoy khimii, v.17, no.8, 1962, 1020-1023

TEXT: Some results of a systematic study of properties of solutions of chlorophosphonazo III [2,7-bis-(4-chloro-2-phosphonbenzolazo)-1,8-dioxynaphthalene-3,6-disulphoacid] and its compounds with thorium, zirconium, titanium and scandium are reported. The molar extinction coefficient of solutions of Th, Zr, Ti and Sc compounds at 690 mμ are, respectively: 43,100; 33,000; 10,800; 12,500; and the apparent equilibrium constants of the complex compounds are:  $pK_{Th} = 13.9$ ;  $pK_{Zr} = 13.4$ ;  $pK_{Ti} = 5.7$ ;  $pK_{Sc} = 6.9$ . A high stability of the complex compounds permits the determination of the above elements in the presence of sulphates, Card 1/2

Use of chlorophosphonazo III for ...

S/075/62/017/008/004/004  
E071/E135

phosphates, oxalates and other interfering ions. The reagent is most selective in respect of thorium and zirconium; the presence of di- and trivalent elements has no practical interference. Of importance is the determination of scandium on the background of zirconium, titanium, iron and aluminium if these are bound with tartaric acid. The determination of thorium and zirconium can be done either by the usual photometric method or by the spectrophotometric titration method. Aqueous solutions of compounds of thorium, zirconium, titanium and scandium with the reagent conform to Beer's law up to concentrations of 1-1.2  $\mu\text{g/ml}$  of Zr, Ti and Sc, and 2  $\mu\text{g/ml}$  of Th. There are 5 figures and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.  
M.V. Lomonosova  
(Moscow State University imeni M.V. Lomonosov)

SUBMITTED: March 13, 1962

Card 2/2

S/075/62/017/009/003/006  
E071/E436

AUTHORS: Alimarin, I.P., Makarova, S.V.

TITLE: Separation of small amounts of tantalum from niobium by the extraction of tetraphenylarsonium fluoro-tantalate

PERIODICAL: Zhurnal analiticheskoy khimii, v.17, no.9, 1962, 1072-1075

TEXT: The use of tetraphenylarsonium chloride for separating small quantities of tantalum from niobium, titanium and zirconium is described. The efficiency of extraction was controlled using radioactive isotopes of  $^{182}\text{Ta}$ ,  $^{95}\text{Nb}$  and  $^{95}\text{Zr}$ . The dependence of the degree of extraction of tantalum with chloroform on the concentration of tetraphenylarsonium chloride, sodium fluoride and acidity of the solution was investigated. It was established that tantalum can be quantitatively extracted (98 to 100%), with an excess of the reagent within a wide range of acidity in sulphuric as well as hydrochloric acid. An insignificant extraction of niobium takes place only from sulphuric acid solutions. The separation can be successfully  
Card 1/2

Separation of small ...

S/075/62/017/009/003/006  
E071/E436

carried out at a ratio of tantalum to niobium of 1:100. Tantalum can be re-extracted from the organic phase by a single shaking with a 2% solution of  $(\text{NH}_4)_2\text{C}_2\text{O}_4$ . The method can also be used for the separation of tantalum from zirconium and titanium. There are 4 figures and 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.  
M.V.Lomonosova (Moscow State University imeni  
M.V.Lomonosov)

SUBMITTED: May 23, 1962

Card 2/2

S/032/62/028/002/004/037  
B101/B110

AUTHORS: Stancheva, St., Alimarin, I. P., and Tsintsevich, Ye. P.

TITLE: Separation of indium from zinc in solutions containing sulfate ions, by means of ion exchange

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 156 - 158

TEXT: The behavior of In on ion exchange resins was studied. The solutions investigated also contained sulfates of Li, Na, K,  $\text{NH}_4$ , Mg, and free  $\text{H}_2\text{SO}_4$ .

For cationites it was found that In sorption on the resin decreased with increasing concentration of sulfate ions, and the In remained completely dissolved at a certain concentration. Anionites sorbed the In completely at sufficiently high sulfate ion concentration. In 0.1 - 7 M  $\text{H}_2\text{SO}_4$ , In was not sorbed either by cationites or by anionites. On the basis of these results, a method was elaborated for separating In from Zn. Indium and zinc salts (ratio In:Zn = 1:100 or 1:1000) in solutions containing 0.5 M  $(\text{NH}_4)_2\text{SO}_4$  were separated by an ЭДЗ-10П (EDE-10P) anionite. The solution

Card 1/3

Separation of indium from zinc...

S/032/62/028/002/004/037  
B101/B110

was adjusted to  $\text{pH} \approx 9$  by means of  $\text{NH}_3$ . No precipitate fell out owing to low In concentration. The solution was then passed through the column at a rate of 3 ml/min. Zn was eluted by a 0.5 M solution of  $(\text{NH}_4)_2\text{SO}_4 + \text{NH}_3$ , and determined either complexonometrically (with eriochrome black T as indicator) or gravimetrically as zinc anthranilate. In was eluted by means of  $\text{HNO}_3$  and determined complexonometrically (pyridyl-(2-azo-4)-resorcin as indicator). At a ratio  $\text{In}:\text{Zn} = 1:1000$ , the values for Zn were about 4% low since the resin retained some Zn. In acid solution (0.35 M  $(\text{NH}_4)_2\text{SO}_4 + 0.01$  M  $\text{H}_2\text{SO}_4$ ), solutions of Zn and In (ratio  $\text{Zn}:\text{In} = 1:1000$  or  $1:10,000$ ) may be separated by a  $\text{KY}-2$  (KU-2) cationite. In remains as complex anion in solution and is titrated complexonometrically. Zn can be eluted with 2 N HCl and, after removal of HCl, it can be determined colorimetrically by dithizon. The Zn and In content found agreed with the amounts of Zn and In added to the solution. There are 4 tables and 6 references: 5 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Kuang Lu Cheng, Anal. Chem., 27, 10, 1582 (1955). ✓

Card 2/3

Separation of indium from zinc...

S/032/62/028/002/004/037  
B101/3110

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State  
University); Khimiko-tekhnologicheskii institut g. Sofiya  
(Sofia Institute of Chemical Technology)

Card 3/3

ALIMARIN, I.P.; ZOLOTOV, Y.I.A.

Extraction in chemical analysis. Zav.lab. 28 no.11:1285-1286  
'62.

(Extraction (Chemistry)) (Chemistry, Analytical) (MIRA 15:11)



ALIMARIN, I.P.; SUDAKOV, F.P.; GOLOVKIN, B.G.

Use of N-benzoylphenylhydroxylamine in analytical chemistry.

Usp.khim. 31 no.8:989-1003 Ag '62.

(MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskii fakul'tet.

(Hydroxylamine) (Chemistry, Analytical)

ALIMARIN, I.P. (Moscow, Bogorodskiy val.d.3); FADEEVA, V.I. [Fadeyeva, V.I.]  
(Moscow, Bogorodskiy val.d.3)

Use of aromatic phosphonic acids for determining rare elements.  
Acta chimica Hung. 32 no.2:171-182 '62.

1. Institut geokhimi i analiticheskoy khimii Akad.nauk SSSR.

ALIMARIN, I.P.

Conference of the Bureau of the International Astronautical  
Federation (IAF). Vest.AN SSSR 32 no.8:95-96 Ag '62.

(MIRA 15:8)

1. Chlen-korrespondent AN SSSR.

(Astronautics--Congresses)

ALIMARIN, I.P.

International Symposium on Analytical Chemistry. Vest. AN SSSR 32  
no.8:96-97 Ag '62. (MIRA 15:8)

1. Chlen-korrespondent AN SSSR.  
(Chemistry, Analytical--Congresses)

ALIMARIN, I. P., dr.

"Modern Problems in the Determination of Trace Elements in Pure Compounds," Institute of Geochemistry and Analytical Chemistry, Moscow, USSR

19th International Congress of Pure and Applied Chemistry/Research on Adhesion/Organometallic Compounds/Magnetic Resonance and Spectral Techniques. 10-17 July 1963

VINOGRADOVA, Ye.N.; GALLAY, Z.A.; FINOGENOVA, Z.M.; ALIMARIN,  
I.P., prof., otv. red.; KOROBTSOVA, N.A., red.; CHISTYAKOVA,  
K.S., tekhn. red.

[Methods of polarographic and amperometric analysis] Metody  
poliarograficheskogo i amperometricheskogo analiza. Moskva,  
Izd-vo Mosk. univ., 1963. 298 p. (MIRA 16:12)

1. Chlen-korrespondent AN SSSR (for Alimarin).  
(Polarography) (Conductometric analysis)

ALIMARIN, I.P.; GALLAY, Z.A.; SHEINA, N.M.; RODIONOVA, T.V.

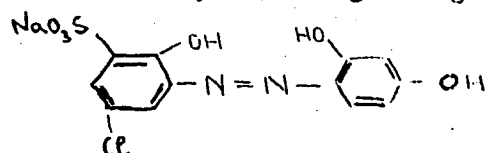
Current-voltage characteristics of N-benzoylphenylhydroxylamine solutions. Izv.AN SSSR.Otd.khim.nauk no.3:567-569 Mr '63.

(MIRA 16:4)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
(Benzohydroxamic acid) (Reduction, Electrolytic)

S/075/63/018/002/009/010  
E075/E436

AUTHORS: Alimarin, I.P., Han Hsi-I  
TITLE: Extractive - spectrophotometric determination of niobium with the aid of lumogallion  
PERIODICAL: Zhurnal analiticheskoy khimii, v.18, no.1, 1963, 82-87  
TEXT: The possibility of using lumogallion



for the extractive-spectrophotometric determination of Nb in the presence of Ta, Ti and Zr was investigated as previous methods have only a limited use. An intense red coloured compound is formed between Nb and lumogallion. It forms most readily in 0.5 to 2.0 N  $H_2SO_4$ . The maximum optical density is reached at Nb:lumogallion = 1:1. The optical density is decreased strongly by oxalic acid and less strongly by citric acid. Tartaric acid has a negligible effect. For Nb concentrations of  $10^{-6}$  to

Card 1/2



Extractive-spectrophotometric ...

S/075/63/018/002/009/010  
EO75/E436

$10^{-4}$  mol/litre the optical density conforms to Beer's law and the formed compound can be used for the photometric determination of Nb. The mean value of equilibrium constant for the formation of Nb - lumogallion complex is 5.6. The lumogallion acid dissociation constants are  $pK_1 = 5.6$  and  $pK_2 = 7.15$ . Zr also forms a coloured complex with lumogallion and interferes in the determination of Nb, but the Zr complex can be decomposed by adding complexon III. The Nb complex can be extracted from  $2\text{NH}_2\text{SO}_4$  with n-butyl alcohol, Zr and Ti remaining in the aqueous phase. Ta does not give a coloured complex with lumogallion but decreases the colour of the Nb-complex at concentrations larger than 3.0 mg/25 ml. There are 8 figures and 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.  
M.V.Lomonosova (Moscow State University imeni  
M.V.Lomonosov)

SUBMITTED: June 21, 1962

Card 2/2

ALIMARTIN, I.P.; KHAN' SI-1 [Han Hsi-1]

Spectrophotometric determination of niobium and tantalum  
by means of 1-(2-pyridylazo)-resorcinol. Zhur. anal. khim.  
18 no.2:182-188 F '63. (MIRA 17:10)

1. Lomonosov State University, Moscow.

ALIMARIN, I.P.; GOLOVINA, A.P.; KEZHUTIN, Yu. M.

Spectrophotometric study of the reaction of thorium with  
datiscetin. Vest. Mosk. un. Ser. 2: Khim. 18 no.3:66-69  
My-Je '63. (MIRA 16:6)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.  
(Thorium compounds) (Datiscetin)  
(Spectrophotometry)

ALIMARIN, I.P.; BORZENKOVA, N.P.; SHMATKO, R.I.

Hydroxamic acids as analytical reagents. Report No.1:  
Spectrophotometric study of the reactions of titanium  
with benzohydroxamic acid. Zhur. anal. khim. 18 no.3:  
342-347 Mr'63. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ALIMARIN, I.P.; PETRUKHIN, O.M.

"Microchemical journal symposium series. Vol. 1. Submicrogram experimentation." Reviewed by I.P. Alimarin, O.M. Petrukhin. Zhur. anal. khim. 18 no.3:416 Mr'63. (MIRA 17:5)

Alimarin, I.P.; Fadeyeva, V.I.

Photometric method for determining scandium with chlorophosphonazo-III  
in wolframite. Vest.Mosk. un. Ser.2: Khim. 18 no.4:67-69 J1-Ag '63.  
(MIRA 16:9)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.  
(Scandium--Analysis) (Wolframite--Analysis)  
(Photometry)

L 16600-63

EWP(q)/EWT(m)/BDS

APFTC/ASD/ESD-3 RM/JD/JG

S/075/63/018/004/008/015

AUTHOR: Alimarin, I. P., Medvedeva, A. M. and Burlova, M. A.

TITLE: The quantitative separation of thorium and titanium by the ion-exchange chromatographic method

PERIODICAL: Zhurnal analiticheskoy khimii, v. 18, no. 4, April 1963, 468-473

TEXT: The authors study the possibility of separating thorium from titanium by the ion-exchange chromatographic method in the presence of hydrogen peroxide and hydrochloric acid. They establish that thorium is quantitatively sorbed onto a KU-2 cationite in the presence of 3-4 N hydrochloric acid and hydrogen peroxide, whereas titanium enters the filtrate as a yellow complex  $[TiO(H_2O_2)]^{2+}$ . They test various desorbents for extracting thorium from an ion-exchange resin, and establish that it may be completely desorbed with ammonium oxalate at practically any concentration above 0.1 M. They show as well that the desorption of thorium with ammonium oxalate takes place as a result of the formation of the complex ion  $[Th(C_2O_4)_3]^{2-}$ . There

Card 1/2

L 16600-63

S/075/63/018/004/008/015

The quantitative separation of .....

are 2 figures and 5 tables. The most important English-language source reads as follows: Mann. C., J. Chromatography, 1, 368 (1955).

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Precision Chemical Technology im. M. V. Lomonosov)

SUBMITTED: June 25, 1962

Card 2/2



L 14941-63

EWP(q)/EWT(m)/BDS AFFID JD/JG

ACCESSION NR: AP3003759

S/0075/63/018/007/0835/0839

AUTHORS: Gibalo, I. M.; Altsharin, I. P.; Davaadorzh, P.

TITLE: Certain derivatives of dithiocarbonic acid as reagents for niobium

SOURCE: Zhurnal analiticheskoy khimii, v. 18, no. 7, 1963, 835-839

TOPIC TAGS: dithiocarbonic acid, niobium, reagent.

ABSTRACT: Authors carried out studies on sodium piperidinedithiocarbamate (NaPrDTK), ammonium phenyldiazinedithiocarbamate (NH<sub>4</sub>FDTK), ammonium pyrrolidinedithiocarbamate (HHyFDTK), and sodium diethyldithiocarbamate (NaDDTK). Purpose of the study was to select the most suitable reagent for niobium from this class. The niobium was precipitated by a 20-fold excess of the above-indicated reagents in a wide range of acidity. Results are tabulated. Tests results show that niobium is quantitatively precipitated from NH<sub>4</sub>FDTK and NaPrDTK in a weakly acid (pH 4-5) and a strongly hydrochloric acid medium (8-10 N HCl). NaDDTK can be used only in a weakly acid medium pH 4-5). NH<sub>4</sub>FDTK does not quantitatively precipitate niobium. The differences in the reactions of these reagents can be explained by their different stability in solutions. NH<sub>4</sub>FDTK, for all practical purposes, does not decompose in aqueous solutions, whereas NaDDTK and NH<sub>4</sub>FDTK

Card

L 14941-63

ACCESSION NR: AP3003759

decompose rapidly. The best reagent turned out to be  $\text{NH}_4\text{FPTX}$ , which authors used in further studies. Conditions for extraction of niobium pyrrolidinedithiocarbamate from tartaric, citric, and oxalic acid solutions were studied. Authors pointed out that niobium pyrrolidinedithiocarbamate can be quantitatively extracted from concentrated hydrochloric acid solutions (8-10 N HCl) as well as from tartaric and oxalic acid solutions at pH 4-5. Conditions for back extraction of niobium from the organic phase were found. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 29Jan63

DATE ACQ: 08Aug63

INCL: 00

SUB CODE: CH

NO REF SOV: 003

OTER: 003

Card 2/2

ALIMARIN, I.P. (Moskva)

Ultrapure substances. Priroda 52 no.9:27-31 '63. (MIRA 16:11)

1. Chlen-korrespondent AN SSSR.

L 16971-63

EWP(q)/EWT(m)/BDS

S/020/63/149/006/015/027

AFFTC/ASD JD

AUTHOR: Gibalo, I. M., Corresponding Member of the Academy of Sciences USSR,  
and Alimarin, I. P., and Davaadorzh, P. 56

TITLE: Extraction of niobium pyrrolidinedithiocarbamate

PERIODICAL: Akademiya nauk SSSR. Doklady. v. 149, no. 6, 1963, 1326-1327.

TEXT: Derivatives of dithiocarbamic acid are valuable analytic reagents to rare elements, but, aside from sodium diethyldithiocarbamate ( $\text{Na} = \text{DDTC}$ ), they have not been sufficiently investigated. One of the less well-known derivatives of this kind is ammonium pyrrolidinedithiocarbamate ( $\text{NH}_4 = \text{PDTC}$ ), a reagent that is more stable in aqueous solutions than  $\text{Na} = \text{DDTC}$ . It has been used for the gravimetric determination of niobium and its separation from tantalum by the precipitation method. The authors were the first to investigate the conditions of the quantitative precipitation of niobium by  $\text{NH}_4 = \text{PDTC}$  and the extraction of the resulting compound by different aqueously insoluble organic solvents. Experiments with different amounts of  $\text{Nb}_2\text{O}_5$  (2-30 mg) showed that niobium pyrrolidinedithiocarbamate ( $\text{Nb} = \text{PDTC}$ ) is quantitatively precipitated only from tartrate and oxalate solutions in the form of a white amorphous residue by 20-fold excess of reagents in the presence of acetate buffer at  $\text{pH} = 4-5$ . In the extraction of  $\text{Nb} = \text{PDTC}$  chloroform proved to be the best solvents. The relationship between extraction by chloroform and acidity of solution is established. There is 1 figure.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow)  
Card 1/1 State University ineni M. V. Lomonsov) SUBMITTED: January 22, 1963